Jan H. Gardner
County Executive

FREDERICK COUNTY GOVERNMENT

DIVISION OF PLANNING & PERMITTING

Steven C. Horn, Division Director

To: Frederick County Planning Commission

From: Steven C. Horn, Director, Planning & Permitting Division

Date: February 3, 2022

Subject: Bill #22-05
Amending Chapter 1-19 of the County Code (Zoning Ordinance) to add Critical Digital Infrastructure as a New Use

Attached, please find the proposed Bill, and Staff's memo. The Council has requested a review and comment from the Planning Commission on this Bill.

Thank you for your attention to this matter.

Attachment
Proposed Bill
Staff Memo

FREDERICK COUNTY PLANNING COMMISSION
February 16, 2022 9:30 a.m.

TITLE: Bill #22-05 Amend 1-19- of the Frederick County Code (Zoning Ordinance) to Add Critical Digital Infrastructure as a New Use

FILE NUMBER: N/A

REQUEST: Bill #22-05 Amend 1-19 of the Frederick County Code (Zoning Ordinance) to Add Critical Digital Infrastructure as a New Use Public Hearing

PROJECT INFORMATION: N/A

APPLICANT/REPRESENTATIVES:

STAFF: Michael Wilkins, Director of Development Review and Planning

RECOMMENDATION: That the Planning Commission provide a recommendation to the Frederick County Council regarding the Text Amendment.

ATTACHMENTS:
Proposed Bill
Staff Memo

Bill No. 22-05

Concerning: Amending Chapter 1-19 of the County Code (Zoning Ordinance) to add Critical Digital Infrastructure as a New Use

Introduced: February 1, 2022

Revised: _____ Draft No. _____

Enacted: _____

Effective: _____

Expires: May 2, 2022

Frederick County Code, Chapter 1-19

Section(s) 11.100, 5.310, 6.100, 8.402, 8.403, 2.170

COUNTY COUNCIL
FOR FREDERICK COUNTY, MARYLAND

By: Council President M. C. Keegan-Ayer on behalf of County Executive Jan Gardner

AN ACT to: Amend Chapter 1-19 of the Frederick County Code (Zoning Ordinance) to add Critical Digital Infrastructure as a new use.

Executive: _____ Date Received: _____

Approved: _____ Date: _____

Vetoed: _____ Date: _____

By amending:

Frederick County Code, Chapter, 1-19 Section(s) 11.100, 5.310, 6.100, 8.402, 8.403, and 2.170

Other: _____

Boldface	*Heading or defined term.*
Underlining	*Added to existing law.*
[Single boldface brackets]	*Deleted from existing law.*
* * *	*Existing law unaffected by bill.*

Bill No. 22-05

The County Council of Frederick County, Maryland, finds it necessary and appropriate to amend the Frederick County Code to amend Chapter 1-19 of the Frederick County Code (Zoning) to add Critical Digital Infrastructure as a new use.

NOW, THEREFORE, BE IT ENACTED BY THE COUNTY COUNCIL OF FREDERICK COUNTY, MARYLAND, that Chapter 1-19 of the Frederick County Code be, and it is hereby, amended as shown on the attached Exhibit 1.

AND BE IT FURTHER ENACTED AND ORDAINED that the following transitional provisions shall apply:

The requirements set forth under 1-19-8.402(B)(5) regarding review by the Architectural Review Committee shall not take effect until the Committee has been appointed by the County Executive and confirmed by the County Council.

_____

M. C. Keegan-Ayer, President
County Council of Frederick County,
Maryland

Exhibit 1

§ 1-19-11.100. DEFINITIONS.

*****

Critical Digital Infrastructure Electric Substation: A high-voltage electric system facility used to switch generators, equipment, and circuits or lines in and out of a system, change AC voltages from one level to another, or change alternating current to direct current or direct current to alternating current. Critical Digital Infrastructure Electric Substations may only be constructed in conjunction with a Critical Digital Infrastructure Facility.

Critical Digital Infrastructure Facility: A facility consisting of one or more buildings used primarily for the storage, management, processing, and transmission of digital data, and which houses computer or network equipment, systems, servers, appliances, and other associated components related to digital data operations. The facility may also include customary accessory uses such as an office use, air handlers, power generators and storage, water cooling and storage facilities, and associated utility infrastructure needed to support sustained operations of the digital infrastructure.

*****

§ 1-19-5.310. USE TABLE.

Uses	*RC*	*A*	*R1*	*R3*	*R5*	*R8*	*R12*	*R16*	*VC*	*MX*	*GC*	*ORI*	*LI*	*GI*
Limited manufacturing and assembly use												PS	PS	PS
General manufacturing														PS

Underlining *indicates matter added to existing law.*
[Single boldface brackets] *indicates matter deleted from existing law.*
*** - *indicates existing law unaffected by bill.*
Bill No. 22-05

Critical Digital Infrastructure Facility													PS	PS
Critical Digital Infrastructure Electric Substation													PS	PS
Nongovernmental Utility	E	E	E	E	E	E	E	E	E		PS		PS	PS
Nongovernmental electric substation													E	E

*****

§ 1-19-6.100. DESIGN REQUIREMENTS FOR SPECIFIC DISTRICTS.

Use Classification	*Minimum Lot Area*	*Minimum Lot Area per Unit*	*Lot Width*	*Front Yard*	*Side Yard*	*Rear Yard*	*Height*
Limited Industrial District LI							
Natural resources	5 acres	-	300	40	50	50	30'
Industrial	20,000	-	100	25	*	20	60'
Automobile services	20,000	-	100	25	*	20	60'
Wholesaling/processing	20,000	-	100	25	**	20	60'
Open space uses	No minimum	-	-	-	-	-	-
Governmental and public utility	20,000	-	200	40	40	40	30'
Nongovernmental utility, nongovernmental electric substation	20,000	-	200	50	50	50	30'
Self-storage units	20,000	-	100	25	10 ****	25 *****	60' ****
Solar facility, commercial	20,000 sq. ft.		200	50	50	50	30'

Critical Digital Infrastructure Facility	80,000		200	50[2]	50[2]	50[2]	60
Critical Digital Infrastructure Electric Substation	20,000		200	50	50	50	30

1

2

Use Classification	*Minimum Lot Area*	*Minimum Lot Area per Unit*	*Lot Width*	*Front Yard*	*Side Yard*	*Rear Yard*	*Height*
General Industrial District GI							
All permitted uses	1 acre	-	150	25	15	40	60'
Open space uses	No minimum	-	-	-	-	-	-
Governmental and public utility	1 acre	-	200	40	40	40	30'
Nongovernmental utility, nongovernmental electric substation	1 acre	-	200	50	50	50	30'
Self-storage units	20,000	-	100	25	10 ****	25 *****	60' ****
Solar facility, commercial	1 acre		200	50	50	50	30'
Critical Digital Infrastructure Facility	80,000		200	50[2]	50[2]	50[2]	60
Critical Digital Infrastructure Electric Substation	20,000		200	50	50	50	30

4

5

6 * Equal to the height of structure.

7 ** Minimum 10' green area no parking within area

8 *** For development within the Village Center Zoning District see also §§ 1-19-
9 7.500(B)(2) and (3)

10 **** Or as determined under §§ 1-19-7.500(B)(3), whichever is greater

11 ***** Except as provided in § 1-19-8.450(B)(2) and § 1-19-8.450(D)(1).

12 1 Any proposed addition would have to meet setbacks required for new structures.
13 Parking requirements of §§ 1-19-6.200 through 1-19-6.240.

2 As shown or equal to height of structure, whichever is greater.

3 Development within the VC zoning district may not exceed the density as specified within §§ 1-19-7.500(B)(1).

*****

§ 1-19-7.600. INDUSTRIAL DISTRICTS

*****

(F) The requirements of 1-19-8.402 apply to a Critical Digital Infrastructure Facility.

*****

1-19-8.402 Critical Digital Infrastructure Facilities in the LI and GI Districts.

The following provisions apply to Critical Digital Infrastructure Facility in the LI and GI Districts.

(A) Bulk Regulations

(1) The Planning Commission may approve a reduction to, but not elimination of, the required yard setbacks in § 1-19-6.100 between adjoining Critical Digital Infrastructure Facilities in the LI and GI Districts during the site plan review process, if the Planning Commission finds that reducing the setbacks:

a. increases the size and usability of open space areas;

b. increases the landscape buffer areas along other adjacent property lines with different land uses;

c. provides additional buffer areas for environmentally sensitive areas or resources; or

d. facilitates compliance with the design criteria listed under §1-19-8.402(B).

Notwithstanding any reduction approved by the Planning Commission, the distance between structures must comply with applicable building code requirements.

(B) Design Requirements

(1) Buildings must be predominantly designed and constructed to include finishes and materials of consistent quality and design on all sides. All building facades that are in public view must avoid the use of undifferentiated facades and long, plain wall sections by including a combination of the following design elements: change in building height, building step-backs or recesses, windows, doors, changes in building material, patterns, textures, colors, or use of accent materials. Architectural renderings or plans must be submitted as part of the Site Development Plan application for approval by Staff and the Planning Commission to assure that the appearance, type of building materials, or other aspects of the building are consistent with the purposes and intent of the Critical Digital Infrastructure design requirements.

(2) Building entrances must be designed and oriented in terms of their relationship to the human scale and must reflect this relationship through the inclusion of human-scaled architectural elements.

(3) Refuse and recycling dumpsters, service doors, and mechanical equipment must face away from roadways, pedestrian routes, and public areas.

(4) In order to minimize visibility from adjacent roads and adjacent properties, ground level and roof top mechanical equipment, power generators, water cooling and storage facilities, utility substations, and other associated utility infrastructure to support sustained operations of the infrastructure must be screened. This screening may be provided by a principal building. Mechanical equipment not screened by a principal building must be screened by a visually opaque fence, screen wall or panel, parapet wall, or other visually opaque screen that must be constructed of materials compatible with those used in the exterior architectural finishes of the principal building.

(5) Staff shall refer site plans to the Architectural Review Committee for review prior to the site plan being scheduled for Planning Commission.

The recommendations of the Architectural Review Committee may be considered by the Planning Commission.

(6) In addition to §1-19.6.400 the following landscaping, screening, and buffering requirements must be met.

a. Front yard(s) abutting a roadway must include a landscaped buffer.

b. Except where adjoining a Critical Digital Infrastructure use, side and rear yards must include a landscaped buffer.

c. A landscaped buffer must include a four-season visual screen resulting in multi-layered, staggered rows of overstory and understory trees and shrubs that are a mix of evergreen and deciduous vegetation, with an emphasis on species that are native to Frederick County.

d. The minimum height of overstory trees within a landscape screen or buffer at planting must be a minimum of 6 feet with a minimum caliper of 2 inches. The minimum height of understory trees and shrubs at the time of planting must be 3 gallon or larger. Trees and shrubs larger than the minimum sizes listed above will be required where the minimum planting sizes will not provide adequate screening or buffering within 2 years. Vegetation used to establish a visual screen shall not be trimmed so as to stunt upward and outward growth or to otherwise limit the effectiveness of the visual screen.

e. A berm, wall, or fence may be used in combination with vegetation to satisfy the screening requirement where deemed appropriate by County Staff and the Planning Commission. Walls and fences must be made of quality materials and enhance rather than detract from the beautification of the site. Walls and fences that are in public view must avoid long, undifferentiated facades and long, plain sections by including a combination of the following design

elements: variations in height, step-backs or recesses, changes in material, patterns, textures, colors, or use of accent materials.

f. If security fencing is proposed, vegetative screening must be placed between the fence and the public view. Fencing must be made of high quality materials. Chain-link and similar woven metal or plastic fencing shall not be used.

g. If forest or hedgerows exist where screening or buffering is required, it must be preserved to the maximum extent practicable and supplemented with new plantings where necessary to provide the desired screening or buffering.

h. All landscaping, screening, and buffering must be maintained in living condition.

i. Applicant must submit a landscape, buffering, and screening plan as part of the site plan application addressing the requirements and timing of plantings. Screening and buffering must be installed as early in the development process as possible. Occupancy shall not be granted if screening and buffering requirements are not installed in accordance with the approved site plan.

j. The Planning Commission may approve a modification to the landscaping, buffering, and screening standards where an alternate landscaping, buffering, and screening plan is provided that meets the purpose and intent of these design requirements.

(7) Parking, loading, and signage must be provided in accordance with §1-19-6.200 through §1-19-6.340.

(8) Lighting must comply with §1-19-6.500, but light poles must not exceed a height of 18 feet. The Planning Commission may require more restrictive lighting heights where deemed appropriate by the Planning Commission.

(9) Bicycle rack requirements shall be in accordance with industrial parks in table §1-19-6.220 (H) (1).

(9) Critical Digital Infrastructure Facilities must meet all criteria found in §§1-19-7.600 and 1-19-7.610.

(C) Subdivision and Street Frontage

(1) Subdivision of lot(s) for Critical Digital Infrastructure uses shall comply with Chapter 1-16 of the County Code.

(2) Where two or more lots are proposed for Critical Digital Infrastructure uses, the lot frontage requirement of §1-19-4.520 may be met by construction of a private street subject to Planning Commission approval and the following:

a. The lot or parcel from which the new lot is being created has fee-simple frontage on a public street.

b. The private street connects directly to a public road.

c. The private street will not serve any uses that would be frequented by the general public.

d. For the purposes of establishing bulk regulations (setbacks, lot width, etc.), the measurements along the portion of the lot(s) fronting a private street must be the same as established for public streets.

e. The design of the private street must comply with Chapter 1-16 of the County Code.

f. Private streets may not create long, dead-end street networks and must serve a limited number of lots and sites, as determined by the Planning Commission.

g. Private streets must be maintained by a property owner association or similar organization.

h. Easements, maintenance agreements, and covenants must be provided to the County for review with the submission of a Final Plat, and must be recorded by the applicant prior to lot recordation and the recording reference noted on the final plat.

(D) Performance Standards

These performance standards for Critical Digital Infrastructure Facilities are intended to mitigate potential detrimental effects on adjacent properties and the neighborhood. All applications for site plan approval must be accompanied by a registered engineer's certification that the use complies with all of the performance standards. If, after occupancy of the structures, continuous or frequent (even if intermittent) violations of the performance standards occur, and after notice is given, bona fide and immediate corrective work is not performed which successfully prevents the violation(s) from reoccurring, the Zoning Administrator may suspend or revoke the Zoning Certificate and the Certificate of Occupancy and require the operations and occupancy to immediately cease. The Zoning Certificate and Certificate of Occupancy will be reinstated after the property owner demonstrates to the Zoning Administrator's satisfaction, that operation of the facilities is able to conform to these requirements.

(1) Noise:

a. Noise must be measured with a sound level meter.

b. The maximum sound pressure levels permitted from any source, measured within an adjacent property line, are set forth below:

Sound Measured to:	**Decibels Continuous Slow Meter Responses**
Industrial Uses	70
Commercial Uses	64
Residential Uses in any Zoning District	55
Institutional Uses	55
All Other Uses	55

c. The provisions of this section do not apply to:

1. Transportation vehicles not under the control of the use.
2. Occasionally used safety signals, warning devices, and emergency pressure relief valves.

3. Temporary construction activity between 7:00 a.m. and 7:00 p.m.

4. Other exemptions identified in §1-11-6- (F).

d. Air handlers, generators, and other mechanical devices must comply with subsection (1)(b) above.

(2) Vibration: No vibration may be produced which is transmitted through the ground and is discernible without the aid of instruments at any point beyond the property line; nor may any vibration produce a particle velocity of 2 inches per second measured at or beyond the property line. This provision does not apply between adjoining Critical Digital Infrastructure Facilities uses.

1-19-8.403 Critical Digital Infrastructure Electric Substation in the LI and GI Districts.

The following provisions apply to Critical Digital Infrastructure Electric Substations in the LI and GI Districts:

(A) A Critical Digital Infrastructure Electric Substation may only be constructed for the purpose of providing power to Critical Digital Infrastructure Facilities, and when a Critical Digital Infrastructure Facility has received site plan approval from the Planning Commission. An application for a Critical Digital Infrastructure Electric Substation may be processed concurrently with an application for a Critical Digital Infrastructure Facility.

(B) A Critical Digital Infrastructure Electric Substation may be connected to another electrical system within the region. Any expansion of a Critical Digital Infrastructure Electric Substation for the purpose of supporting other uses or users must follow the rules, regulations, and procedures applicable to Nongovernmental Electric Substation use.

(C) An application for a Critical Digital Infrastructure Electric Substation must include the following:

(1) Information indicating the general conditions of use and existing improvements on adjoining properties within a 1,000-foot radius surrounding the subject property.

(2) A description of the potential environmental and ecological (including water, air, wildlife, and vegetation) effects of the proposed Critical Digital Infrastructure Electric Substation on properties in the vicinity of the proposed development.

(3) An assessment of the impact on nearby properties from electromagnetic fields to be generated by the Critical Digital Infrastructure Electric Substation.

(4) An assessment of safety and reliability, including provisions for emergency operations and shutdowns.

(5) Information as to how the applicant proposes to address the visual impact of the Critical Digital Infrastructure Electric Substation on designated preservation areas, such as rural legacy areas, agricultural preservation areas, critical farms, Monocacy scenic river, designated heritage areas, historic sites and sites eligible for historic designation.

(6) A description of methods to be utilized to mitigate any waste disposal, air quality, visual or noise impacts associated with the development or operation of the Critical Digital Infrastructure Electric Substation.

(D) Design Requirements

(1) Landscaping, Screening, and Buffering

a. A landscaped buffer must include a four-season visual screen resulting in multi-layered, staggered rows of overstory and understory trees and shrubs that are a mix of evergreen and deciduous vegetation, with an emphasis on species that are native to Frederick County.

b. The minimum height of overstory trees within a landscape screen or buffer at planting must be a minimum of 6 feet with a minimum caliper of 2 inches. The minimum height of understory trees and shrubs at the time of planting must be 3 gallon or larger. Trees and shrubs larger than the minimum sizes listed above will be required

where the minimum planting sizes will not provide adequate screening or buffering within 2 years. Vegetation used to establish a visual screen shall not be trimmed so as to stunt upward and outward growth or to otherwise limit the effectiveness of the visual screen.

c. A berm, wall, or fence may be used in combination with vegetation to satisfy the screening requirement where deemed appropriate by County Staff and the Planning Commission. Walls and fences must be made of quality materials and enhance rather than detract from the beautification of the site. Walls and fences that are in public view must avoid long, undifferentiated facades and long, plain sections by including a combination of the following design elements: variations in height, step-backs or recesses, changes in material, patterns, textures, colors, or use of accent materials.

d. If security fencing is proposed, vegetative screening must be placed between the fence and the public view. Fencing must be made of high quality materials. Chain-link and similar woven metal or plastic fencing shall not be used.

e. If existing forest or hedgerows exist where screening or buffering is required, it must be preserved to the maximum extent practicable and supplemented with new plantings where necessary to provide the desired screening or buffering.

f. All landscaping, screening, and buffering must be maintained in living condition.

g. The Planning Commission may approve a modification to the landscaping, buffering, and screening standards where an alternate landscaping, buffering, and screening plan is provided that meets the purpose and intent of this section.

h. Applicant must submit a landscape, buffering, and screening plan as part of the site plan application addressing the requirements and

timing of plantings. Screening and buffering must be installed as early in the development process as possible. Occupancy shall not be granted if screening and buffering requirements are not installed in accordance with the approved site plan.

(2) Lighting, if provided, must comply with §1-19-6.500, and light poles shall not exceed a height of 18 feet. The Planning Commission may reduce lighting height(s) where deemed appropriate by the Planning Commission.

(3) Noise:

a. Noise will be measured with a sound level meter.

b. The following table describes the maximum sound pressure level permitted from any source and measured at any adjacent property line.

Sound Measured to:	**Decibels Continuous Slow Meter Responses**
Industrial Uses	70
Commercial Uses	64
Residential Uses in any Zoning District	55
Institutional Uses	55
All Other Uses	55

c. The following sources of noise are exempt:

1. Transportation vehicles not under the control of the use.
2. Occasionally used safety signals, warning devices, and emergency pressure relief valves.
3. Temporary construction activity between 7:00 a.m. and 7:00 p.m.

(4) Vibration: No vibration may be produced which is transmitted through the ground and is discernible without the aid of instruments at any point beyond the property line; nor may any vibration produce a particle velocity

of 2 inches per second measured at any point beyond the property line. This provision does not apply between adjoining Critical Digital Infrastructure uses.

(5) Height: The Planning Commission may approve an increase in the maximum height established in §1-19-6.100, if it finds the increased height would not have an adverse impact on properties in the vicinity of the proposed Critical Digital Infrastructure Electric Substation. For each 3 foot increase in the height above the maximum height established in 1-19-6.100, , the required front, side, and rear yards set back measurements must be increased by one additional foot.

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§1-19-2.170. ARCHITECTURAL REVIEW COMMITTEE.

A. ESTABLISHED.

There is hereby established an Architectural Review Committee.

B. MEMBERS.

(1) The Architectural Review Committee shall consist of 5 members appointed by the County Executive, subject to confirmation by the County Council. The Committee members shall be appointed for staggered 5 year terms of office. At the end of a term, a member continues to serve until a successor qualifies and is appointed. A member who is appointed after a term has begun will serve only for the remainder of the term and until a successor qualifies and is appointed.

(2) Members may not be related to, either by blood or marriage, or associated with any person or corporation who is currently working on or is invested in a Critical Digital Infrastructure project in the county, or who has had such relations or interests in a Critical Digital Infrastructure project in the county within a year prior to the member's date of appointment.

(3) Members should have a license, certificate, degree, training or work experience in architecture, landscape architecture, experience in related commercial/industrial construction and development, or other areas of experience or interest as determined to be relevant by the appointing official.

C. FUNCTIONS.

(1) The Architectural Review Committee will meet as needed to review site development plans for proposed Critical Digital Infrastructure Facilities. The Committee will provide recommendations to the Planning Commission regarding an application's compliance with §1-19-8.402(B)(1-5). The Committee may also perform other related functions as delegated from time to time by the county.

Jan H. Gardner
County Executive

FREDERICK COUNTY GOVERNMENT

DIVISION OF PLANNING & PERMITTING

Steven C. Horn, Division Director

TO: County Council

THROUGH: Jan H. Gardner, County Executive

FROM: Steven C. Horn, Director, Planning & Permitting
Michael Wilkins, Director, Development Review and Planning Department

DATE: November 29, 2021

SUBJECT: Amendments to Chapter 1-19 of the Frederick County Code (Zoning Ordinance)

ISSUE:

Should the County Council adopt amendments to Chapter 1-19 of the Frederick County Code (Zoning Ordinance) to establish new Critical Digital Infrastructure uses?

BACKGROUND:

The proposed amendments to the Zoning Ordinance will establish a new use to allow data centers and the substations that serve them in the Limited Industrial and General Industrial zoning districts, subject to meeting specified design criteria.

ANALYSIS:

The following changes to the Zoning Ordinance are proposed:

1-19-11.100 - Definitions

Two new definitions are proposed;

1. Critical Digital Infrastructure Facility: Defines the use and customary accessory uses that are typical of a data center operation. The term and its meaning have been crafted so that, in the event new technology supplements or replaces data centers as we know them today, the definition could still apply.
2. Critical Digital Infrastructure Electric Substation: Electric substations are an integral part of a data center facility. The Code has an existing definition for nongovernmental electric substation (500+ kv that serves a region) and nongovernmental utility (less than 500 kv that serves the region). This new definition encompasses both the substation and utility needs and is only to serve critical digital infrastructure.

§ 1-19-5.310. USE TABLE.

The Use Table has been amended to add Critical Digital Infrastructure Facility and Critical Digital Infrastructure Electric Substation as uses permitted with Site Plan approval in the Limited Industrial and General Industrial zoning districts.

§ 1-19-6.100. DESIGN REQUIREMENTS FOR SPECIFIC DISTRICTS.

The tables for the Limited Industrial Facility and the General Industrial zoning districts have been amended to list the Critical Digital Infrastructure and Critical Digital Infrastructure Electric Substation uses along with the required lot size, setbacks, and height.

§ 1-19-8.402 Critical Digital Infrastructure Facilities in the LI and GI Districts.

This new section outlines the minimum design standards that must be met, including architecture, landscaping, screening, buffering, and lighting.

Subsection C would allow the use of private streets in lieu of public streets. Data centers are frequently built as "campuses" with multiple data centers located on the same property or subdivision. Depending on the occupant, data centers may have security concerns that warrant restricted access. In these scenarios where public access is limited or unnecessary Staff wishes to allow the use of private streets.

Subsection D includes performance standards for sound and vibration. The proposed language is similar to existing language under §1-19-7.610 that is applicable to industrial districts, but has been written to specifically address data centers. Noise is a considerable concern in many jurisdictions where data centers are permitted. The proposed noise standards have been crafted to limit impact to adjoining properties with different land uses. The chart below provides some perspective on decibel levels.

Decibel Level Comparison Chart

Environmental Noise	*dBA*
Jet engine at 100'	140
Pain Begins	*125*
Pneumatic chipper at ear	120
Chain saw at 3'	110
Power mower	107
Subway train at 200'	95
Walkman on 5/10	94
Level at which sustained exposure may result in hearing loss	*80-90*
City Traffic	85
Telephone dial tone	80
Chamber music, in a small auditorium	75-85
Vacuum cleaner	75
Normal conversation	60-70
Business Office	60-65
Household refrigerator	55
Suburban area at night	40
Whisper	25
Quiet natural area with no wind	20
Threshold of hearing	0

Note: dBA = Decibels, A weighted

Source: Yale University https://ehs.yale.edu/sites/default/files/files/decibel-level-chart.pdf

§ 1-19-8.403 Critical Digital Infrastructure Electric Substation in the LI and GI Districts.

This new section establishes design criteria for the new Critical Digital Infrastructure Substation use. This use is instrumental in the functionality of a data center, and therefore the additional step of receiving Board of Appeals approval has been removed for this specific type of substation. The design criteria proposed under this section borrows heavily from the criteria currently considered by the Board of Appeals for

Nongovernmental Electric Substation while also including some of the same landscaping, screening, and buffering requirements of the Critical Digital Infrastructure uses. This section also includes noise and vibration standards that mirror those for the Critical Digital Infrastructure uses.

§1-19-2.170. ARCHITECTURAL REVIEW COMMITTEE.

This section establishes a new Architectural Review Committee. Critical Digital Infrastructure often utilizes buildings that are hundreds of thousands of square feet and could have a significant impact on a neighborhood. Having a committee consisting of architects, industrial specialists, and related experiences will help ensure the design criteria outlined under §1-19-8.402 are being met.

The membership section is written similarly to other review committees already established in the County. The functions of this committee are limited to reviewing applications for compliance with §1-19-8.402(B)(1-5).

Transitional provisions have been proposed in the Bill to waive the requirements for review by the committee until the committee is appointed and confirmed. This provision will avoid delaying applications that may be submitted before the committee is active.

Draft Building and Site Design Guidelines
A draft of the Building and Site Design Guideline is attached to this staff report. This companion document is not intended to be adopted as part of the legislation. Rather, it will be a reference tool to be used to illustrate good and bad examples of CDI architecture and landscaping. This guideline will continue to be developed.

RECOMMENDATION:

The County Council should introduce and consider the attached Bill to amend Chapter 1-19 of the Frederick County Code (Zoning Ordinance) to establish Critical Digital Infrastructure uses.

Approve? Yes X **No** _____

DocuSigned by:
Jan Gardner
D9DB2CAD87AF435...

12/7/2021

Jan H. Gardner, County Executive
Frederick County, Maryland

Date

FINANCIAL IMPACT: No

ATTACHMENT(S):

Attachment 1- Proposed Bill
Attachment 2- Draft Design Guidelines

FREDERICK COUNTY

DRAFT

BUILDING AND SITE DESIGN GUIDELINES FOR CRITICAL DIGITAL INFRASTRUCTURE

Fannie Mae Data Center – rodgers.com

Use of Design Guidelines

The Frederick County Design and Development was created for planners, developers, engineers to seeking to develop any digital critical infrastructure in Frederick County.

Critical Digital Infrastructure Facility: A use or facility consisting of one or more buildings used primarily for the storage, management, processing, and transmission of digital data, which houses computer and or network equipment, systems, servers, appliances, and other associated components related to digital data operations. Such facility may also include an accessory office use, air handlers, power generators, water cooling and storage facilities, utility substations, and other associated utility infrastructure to support sustained operations of the digital infrastructure.

Critical Digital Infrastructure Electric Substation: A high-voltage electric system facility used to switch generators, equipment, and circuits or lines in and out of a system, change AC voltages from one level to another, or change alternating current to direct current or direct current to alternating current. Critical Digital Infrastructure Electric Substations may only be constructed for the primary purpose of providing power to Critical Digital Infrastructure.

Goals

- To clarify and explain the architectural and development design standards.
- To graphically represent the design guidelines and better illustrate the application of the guidelines.
- To be used as a reference tool.
- To improve the quality and compatibility of development of digital critical infrastructure proposed in Frederick County.

Process

Architectural renderings or plans shall be submitted as part of the Site Development Plan application for approval by Staff and the Planning Commission to assure that the appearance, type of building materials, or other aspects of the building are consistent with the purposes and intent of the Critical Digital Infrastructure design requirements.

ARCHITECTURE AND BUILDING DESIGN

Finishes and Materials

Buildings shall be predominantly designed and constructed to include finishes and materials of consistent quality and design on all sides.

Materials help define architectural styles and create visually appealing building facades.

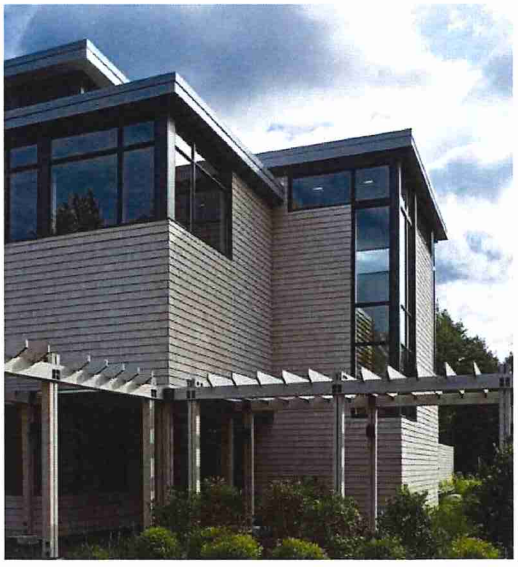
Types of Exterior Materials for Critical Digital Infrastructure

- Masonry
- Metal
- Siding
- Glass
- Composite

Brick Exterior Design – bruns-pak.com

Glass Exterior Design – builtin.com

Combination of Siding, Glass, Metal Exterior – LL Bean Stonewall Data Center - hed.design.com



LL Bean Data Center Enlarged – rrcengineering.com

The materials for each buildng should:

- Complement the neighborhood, region, and architectural style.
    - For example: buildings located in more urban or suburban settings may appear more modern or appear like office buildings.
- Be durable and compatible with other building materials.
- Have a finished appearance on all sides.
    - The variety of finishes of the materials can add character to a building design.

This modern CDI building would be more appropriate in an urban environment.

This modern CDI building would be appropriate in an urban environment. Photo Credit: Mike Wilkins

This CDI building has the appearance of an institutional use – bruns-pak.com

For example: metal finishes can be applied in a variety of finishes like ribbed, batten, flat, perforated etc.

Building Exterior Finish Precedent - prweb.com

Equinix NY5 – blog.equinix.com

Building Exterior Finish Precedent - stainless-plate.com

Building Façade and Articulation Designs Discouraged:

All building facades that are in public view shall avoid the use of undifferentiated facades and long, plain wall sections. Adding architectural elements to otherwise massive building structures help bring the scale and massing to a human scale.

The building facades should avoid:

- Sole reliance on horizontal or vertical bands
- Shallow recesses or bump outs
- Rooflines at the same heights or no step-backs
- Indistinct entrances
- Use of color schemes with little or no contrast
- Bulk of building mass a single color

There are little to no architectural elements to break down the scale of this CDI, which is discouraged. Scott Data Center – scottdatacenter.com

This CDI could use more articulation in color, walls, roofline, etc., especially when viewed from the public street. Banner Data Center – kpff.com

The splash of blue on the walls do not successfully break down the mass of the CDI building. Photo Credit: Mike Wilkins

The color contrast, shallow variation in the walls, and odd entrances do not break up the building massing or long plain facades. SDN Communications Data Center – sdncommunications.com

The light-colored portion of the CDI is lost against the bulk of the dull grey concrete building. Photo Credit: Mike Wilkins

Building Façade and Articulation
Designs Encouraged:

Long plain wall sections can be avoided with the combination of the following design elements:

- Changes in building material and building heights
- Changes in patterns and textures
- Building step-backs, recesses, or protrusions
- Colors or use of accent materials (prominent use at entrances)
- Use of windows (or faux windows)

This CDI demonstrates a varied roofline, pedestrian scaled entrance, the use of clear and glazed windows. Element Critical – CoStar.com

Architectural Features also encouraged:

- Accent/trim colors that contrast but are compatible with primary building color
- Perforated or louvered screens
- Distinct articulation of the building sections (base, middle, and top)
- Columns and bays
- Substantial recesses

The building mass is broken up well by using a combination of a difference material, color, sizes, and bump outs.
Highmark Data Center – callisonrtkl.com

Building entrances shall be designed and oriented in terms of their relationship to the human scale and shall reflect this relationship through the inclusion of human-scaled architectural elements.

The CDI building shows a pedestrian scaled entrance highlighted by a designed accent glass glazed wall. CloudHQ's MCC1 Data Center – datacenterknowledge.com

Color, vertical and horizontal designs, provides visual interest to the CDI building. More use of bump outs or recesses and a varied roofline would increase the visual break down of the massing. Photo Credit: Mike Wilkins

This CDI building utilizes color and faux windows to avoid plain wall sections. A more prominent entrance, better screening, and location of duct work would greatly increase an already attractive design. Photo Credit: Mike Wilkins

A prominent entrance, use of color, bump outs, change of material in addition to faux windows work well on this CDI rendering.
Corgan Data Center – corgan.com

Other Critical Digital Infrastructure Building Design Examples:

Building M1 – hed.design

Advanced Technology Research Facility Data Center – hdrinc.com

NTT VA3 Data Center – hed.design

VA2 Data Center – ragingwire.com

Data Center Exterior Precedent – bruns-pak.com

NSA's Utah Data Center - businessinsider.com

QTS Data Center - qtsdatacenters.com

SITE DESIGN

Screening and Buffering

In order to minimize visibility from adjacent roads and adjacent properties, ground level and roof top mechanical equipment, power generators, water cooling and storage facilities, utility substations, and other associated utility infrastructure to support sustained operations of the infrastructure shall be screened.

This CDI building has a combination of fencing and a berm. Landscaping needs to be added as a reinforcement to the screening. Mineral Gap Data Center - (dpfacilities.com)

Types of Effective Screens for Critical Digital Infrastructure

- Principal Building
- Visually Opaque Fence*
- Screen Wall or Panel*
- Parapet Wall*
- Other visually opaque screen that shall be constructed of materials compatible with those used in the exterior architectural finishes of the principal building.

*Walls and fences must be made of quality materials and enhance rather than detract from the beautification of the site.

Fencing and landscaping working together for an effective screen. Multilayered landscaping with a variety of plant materials is needed. Photo

In addition to the items to be screened listed above, the areas that shall be screened and located to the rear or side of the buildings or be incorporated in the building design:

- Service and Loading Areas
- Refuse and Recycling Areas

Areas requiring a landscape buffer:

- Front yards abutting roadways
- Side and rear yards (except where adjoining a CDI use)

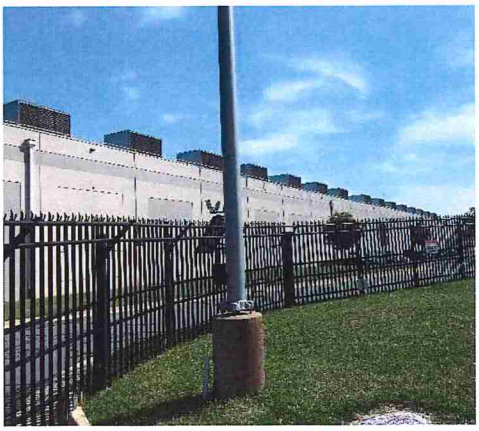
Wall of similar building materials to successfully screen outdoor equipment. Photo Credit: Mike Wilkins

Types of Effective Buffers for Critical Digital Infrastructure

- Landscape buffer (in accordance with the Frederick County Zoning Ordinance)
- Berm, wall, or fence in combination with vegetation.
    - If security fencing is proposed, vegetative screening shall be placed between the fence and the public view.
- Existing forest or hedgerows (supplemented with new plantings where necessary)

This current condition of the CDI building does not provide sufficient fencing and landscaping to successfully screen the ground equipment from the public way. Pacific Blvd - Google Maps

The ground equipment is clearly visible from the public way and there is not enough landscaping for a suitable screen. Photo Credit: Mike Wilkins



Views of the rooftop equipment must be screened, unlike this CDI building. Photo Credit: Mike Wilkins

This portion of the CDI site is not adequately screened with the fencing and landscaping.
Photo Credit: Mike Wilkins

Although the dumpster enclosures blend in with the CDI building, the enclosure should not be viewed from the public street. Photo Credit: Mike

Another example of rooftop mechanical equipment that must be screened from public view. Red Rum Dr - Google Maps

CDI Electric Substations must be thoughtfully designed where the structures have sufficient screening and buffering from the public street. This CDI Electric Substation has no visual screen. Photo Credit: Mike Wilkins

This CDI Electric Substation has a wall and landscaping. The color of the wall brings attention to the utilities. More design in the materials, colors, and altering wall direction would help with concealment. Photo Credit: Mike Wilkins

A mixture or alternate row of trees would greatly enhance the landscape screening of this CDI building.
Photo Credit: Mike Wilkins

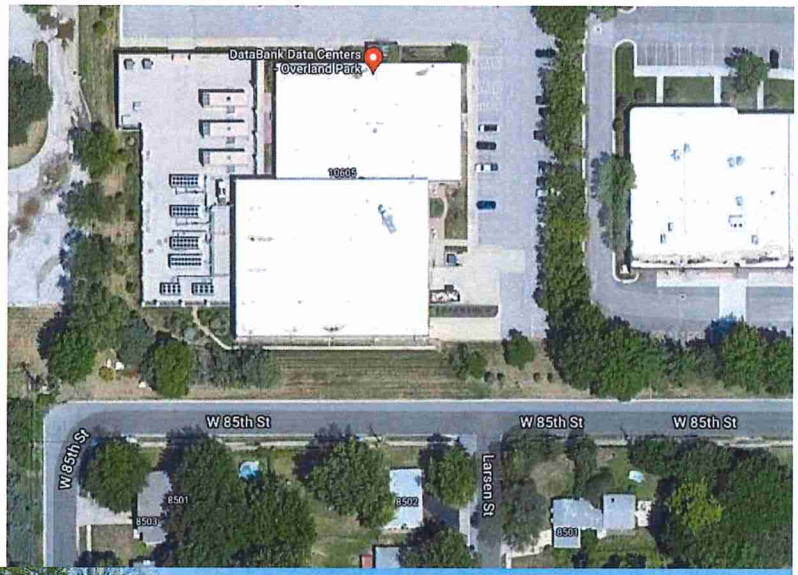
The inclusion of deciduous overstory trees to the existing landscaping will adequately screen the site from the public way. In addition to the screening, a higher quality fence would be required.
Photo Credit: Mike Wilkins

The landscaping throughout this site does a good job of visually breaking up the size of this CDI building.
Photo Credit: Mike Wilkins

SITE DESIGN

Land Use Compatibility

Data Centers abutting residential, institutional or agricultural districts must provide sufficient buffering and screening. Landscape buffering and screening must be heavily landscaped and a mix of deciduous and evergreen trees. If buffered or screened by a fence or wall then materials, colors, form, scale, and design of the fencing and walls considered should be compatible with the main structure.

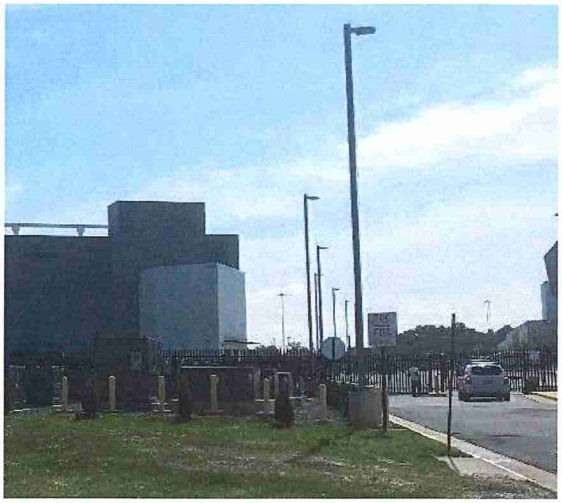


The CDI building above does not provide adequate buffer or screening from the public way or the nearby residential properties. Kansas City, MO data center - Google Maps

SITE DESIGN

Lighting

Extremely tall light poles add to the overwhelming mass of the buildings and site. Light pole must be designed in accordance with the Frederick County Zoning Ordinance but not to exceed 18 ft. More restrictive lighting may be enforced where deemed appropriate.



The light poles on this CDI site are unnecessarily high. Photo Credit: Mike Wilkins

An example of parking area light poles that are higher than needed, especially in an area where trucks are not permitted. Waxpool Rd - Google Maps

This CDI building also shows unnecessarily high light poles. VA-625 - Google Maps

The light poles and building mounted fixtures on this CDI site are appropriately sized. Photo Credit: Mike Wilkins

An example of reduced height of the parking area light poles. Photo Credit: Mike Wilkins

The security entrance at this CDI building is lighted by fixtures whose poles do not exceed the height of the building. Photo Credit: Mike Wilkins